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Serial No.: 10/766,139  
Docket No.: PVI-5541DIVCON  
Amendment dated July 26, 2007  
Responsive to the Office Action dated June 5, 2007

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**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**5 Listing of claims:**

1-17. (Canceled)

18. (Previously presented) A two-part prosthetic heart valve for implantation within a  
10 native heart valve, comprising:

a substantially cylindrical tissue-engagable base portion expandable from a collapsed state to an expanded state, the collapsed state sized for delivery through a delivery catheter to a heart valve annulus and the expanded state sized to contact the heart valve annulus; and

15 a leaflet subassembly including a self-expandable metallic support structure and three heart valve leaflets, the leaflets being attached to the support structure at commissures, wherein the support structure has a fabric covering and the three heart valve leaflets are attached to the support structure at least in part by stitches along the fabric covering; and

20 mechanical coupling members on the tissue-engagable base portion and leaflet subassembly for allowing the leaflet subassembly to mechanically couple to the tissue-engagable base portion, wherein the mechanical coupling members on the tissue-engagable base comprising axial posts configured for connection to the mechanical coupling members on the leaflet subassembly;

25 wherein the tissue-engagable base portion and leaflet subassembly are separate components and the leaflet subassembly is configured to mechanically connect to the

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tissue-engagable base portion at the time of an implant procedure for providing a prosthetic heart valve.

19. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein  
5 the support structure comprises a wireform and wherein the three heart valve leaflets are attached to the wireform.

20. (Canceled)

10 21. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein  
the support structure comprises an elastic wireform for supporting the leaflets and wherein the wireform provides alternating commissures and cusps.

15 22. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein  
the three heart valve leaflets are individual leaflets attached to the support structure separately from each other.

23. (Canceled)

20 24. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein  
the three heart valve leaflets are formed of bioprosthetic tissue.

25 25. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein  
the tissue-engagable base portion is plastically-expandable from its collapsed state to its expanded state.

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26. (Previously presented) The two-part prosthetic heart valve of claim 18, wherein the tissue-engagable base portion is self-expandable from its collapsed state to its expanded state.

27-37. (Canceled)

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38. (Previously presented) A two-part prosthetic heart valve for implantation within a native heart valve, comprising:

10 a tissue-engagable base expandable from a collapsed state to an expanded state, the collapsed state sized for advancement through a patient's vasculature to a heart valve annulus and the expanded state sized to engage the heart valve annulus, the tissue-engagable base having an outflow rim and a plurality of commissure posts rigidly attached to extend beyond the outflow rim and a plurality of cusp posts rigidly attached to extend beyond the outflow rim;

15 a leaflet subassembly including a support structure and three heart valve leaflets, the leaflets being attached to the support structure at their commissures, wherein the support structure comprises an elastic wireform for supporting the leaflets and wherein the wireform provides alternating commissures and cusps; and

20 a plurality of discrete mating connectors on the leaflet subassembly and tissue-engagable base, one each on the leaflet subassembly and base forming a pair of mating connectors, the mating connectors configured to mechanically couple the leaflet subassembly to the tissue-engagable base when the tissue-engagable base is in the expanded state, each commissure post and cusp post having one of the mating connectors thereon for securely coupling to a mating connector on one of the commissures and cusps of the elastic wireform.

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39. (Previously presented) The two-part prosthetic heart valve of claim 38, wherein the tissue-engagable base is plastically-expandable from the collapsed state to the expanded state.

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40.-42. (Canceled)

43. (Previously presented) The two-part prosthetic heart valve of claim 38, wherein  
5 each pair of the mating connectors joins by axially displacing the leaflet subassembly toward the  
tissue-engagable base.

44. (Currently amended) A two-part prosthetic heart valve for implantation within a  
native heart valve, comprising:

10 a tissue-engagable base expandable from a collapsed state sized for advancement  
through a delivery catheter to an expanded state sized to contact the valve annulus, the  
tissue-engagable base generally defining a tubular body having an inflow end and an  
outflow rim; and

15 a leaflet subassembly including an elastic wireform supporting three heart valve  
leaflets, wherein the tissue-engagable base and leaflet subassembly are separate  
components adapted to be stored separately and the leaflet subassembly is configured to  
be mechanically coupled to the tissue-engagable base at the time of an implant procedure  
to form a prosthetic heart valve;

20 wherein, the three heart valve leaflets are axially spaced from the outflow rim of  
the tubular body such that the heart valve leaflets are not positioned within the tubular  
body after the leaflet subassembly has been mechanically coupled to the tissue-engagable  
base.

45. (Previously presented) The two-part prosthetic heart valve of claim 44, wherein  
25 the tissue-engagable base is plastically-expandable from its collapsed state to its expanded state.

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46. (Currently amended) The two-part prosthetic heart valve of claim 44, wherein the leaflet subassembly comprises an elastic wireform has having alternating commissures and cusps for supporting the three heart valve leaflets.

5 47. (Previously presented) The two-part prosthetic heart valve of claim 46, wherein the leaflet subassembly is configured to mechanically couple to the tissue-engagable base along a plurality of discrete locations.

10 48. (Previously presented) The two-part prosthetic heart valve of claim 44, further comprising mechanical coupling members on the tissue-engagable base and leaflet subassembly for allowing the leaflet subassembly to mechanically couple to the tissue-engagable base.

15 49. (Previously presented) The two-part prosthetic heart valve of claim 48, wherein the mechanical coupling members on the tissue-engagable base comprise axial posts configured for connection to the mechanical coupling members on the leaflet subassembly.

50. (Currently amended) A two-part prosthetic heart valve for implantation within a native heart valve, comprising:

20 a tissue-engagable base expandable from a collapsed state to an expanded state, the collapsed state sized for advancement through a patient's vasculature to a heart valve annulus and the expanded state sized to engage the heart valve annulus;

25 a an expandable leaflet subassembly including a support structure and three heart valve leaflets, the leaflets being attached to the support structure at their commissures, the leaflet subassembly being expandable from a collapsed state to an expanded state; and

25 a plurality of axially extending discrete mating connectors on the leaflet subassembly and tissue-engagable base, one each on the leaflet subassembly and base forming a pair of mating connectors, wherein axial displacement of the leaflet subassembly

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in its expanded state toward the expanded tissue-engageable base in its expanded state  
actuates a mutual coupling mechanism on the pairs of mating connectors so as to  
mechanically couple the leaflet subassembly to the tissue-engageable base.

5 51. (Previously presented) The two-part prosthetic heart valve of claim 50, wherein  
the tissue-engagable base is plastically-expandable from the collapsed state to the expanded state.

10 52. (Previously presented) The two-part prosthetic heart valve of claim 50, wherein  
the support structure comprises an elastic wireform for supporting the leaflets and wherein the  
wireform provides alternating commissures and cusps.

15 53. (Previously presented) The two-part prosthetic heart valve of claim 52, wherein  
mating connectors on the leaflet subassembly are provided on each of the commissures and cusps  
of the elastic wireform.

54. (Currently amended) The two-part prosthetic heart valve of claim 52, the tissue-  
engagable base further including an outflow rim and a plurality of commissure posts rigidly  
attached to the tissue-engagable base so as to extend generally axially beyond the outflow rim,  
and a plurality of cusp posts rigidly attached to the tissue-engagable base so as to extend beyond  
20 the outflow rim, each commissure post and cusp post having one of the mating connectors  
thereon for securely coupling to a mating connector on one of the commissures and cusps of the  
elastic wireform.

25 55. (Previously presented) The two-part prosthetic heart valve of claim 50, wherein  
the mating connectors are joined together by axial compression.

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56. (Previously presented) The two-part prosthetic heart valve of claim 55, wherein the mating connectors are configured to snap fit together.

57. (Previously presented) The two-part prosthetic heart valve of claim 55, wherein one of each pair of mating connectors comprises a partial circle opening in an axial direction toward the other of the pair.

58. (Currently amended) A two-part prosthetic heart valve for implantation within a native heart valve, comprising:

10 a tissue-engagable base expandable from a collapsed state sized for advancement through a delivery catheter to an expanded state sized to contact the valve annulus, the tissue-engagable base generally defining a tubular body having an inflow end and an outflow rim; and

15 a leaflet subassembly including an elastic wireform supporting three heart valve leaflets formed of biological tissue, wherein the tissue-engagable base and leaflet subassembly are separate components and the leaflet subassembly is configured to be mechanically coupled to the tissue-engagable base to form a prosthetic heart valve; and

20 mechanical coupling members on the tissue-engagable base and leaflet subassembly for allowing the leaflet subassembly to mechanically couple to the tissue-engagable base, wherein the mechanical coupling members on the tissue-engagable base comprises axial posts configured for connection to the mechanical coupling members on the leaflet subassembly;

wherein the three heart valve leaflets are axially spaced from the outflow rim of the tubular body such that the heart valve leaflets are not positioned within the tubular body.

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